



Manufacturers' Advisory Correspondence (MAC) #97-01

April 14, 1997

TO: ALL PASSENGER CAR MANUFACTURERS
ALL LIGHT-DUTY TRUCK MANUFACTURERS
ALL MEDIUM-DUTY VEHICLE MANUFACTURERS
ALL HEAVY-DUTY VEHICLE MANUFACTURERS
ALL OTHER INTERESTED PARTIES

SUBJECT: Assigned Deterioration Factors (DFs) for Vehicles
Certified to the Useful Life and Running Loss (so-called "Enhanced")
Evaporative (Evap) Emission Standards

This letter transmits the attached Manufacturers Advisory Correspondence (MAC) which describes the Air Resources Board's policy regarding the use of assigned evap DFs for 1995 model-year and subsequent vehicles certified to the enhanced evap emission standards.

If you have any questions or comments, please contact
Mr. Duc Nguyen, Manager, at (818) 575-6844, or
Ms. Rhonda Runyon, Staff, Certification Section at (818) 575-6653.

Sincerely,

R.B. Summerfield, Chief
Mobile Source Operations Division

Attachment

State of California

AIR RESOURCES BOARD

MANUFACTURERS ADVISORY CORRESPONDENCE NO. 97-01

SUBJECT: Assigned Deterioration Factors (DFs) for Vehicles Certified to the Useful Life and Running Loss (so-called "Enhanced") Evaporative (Evap) Emission Standards

APPLICABILITY:

1995 and subsequent model-year (MY) gasoline-fueled passenger cars, light-duty trucks, and medium-duty vehicles, and heavy-duty vehicles certified to the enhanced evap emission standards.

REFERENCES:

1. California Evaporative Emission Standards and Test Procedures for 1978 and Subsequent Model Motor Vehicles, last amended April 24, 1996 and incorporated by reference in Title 13, California Code of Regulations (CCR), Section 1976.
2. California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles, last amended June 24, 1996 and incorporated by reference in Title 13, CCR, Section 1960.1.
3. Title 40, Code of Federal Regulations, Part 86.

[References to the above documents are indicated by brackets.]

BACKGROUND AND DISCUSSION:

Following an August 1990 hearing, the Air Resources Board (ARB) adopted the "enhanced" evap emission standards and test procedures which were designed to control evap emissions during summer months when ambient conditions exacerbate the potential for high evap emissions. The enhanced procedures include a running loss (RL) determination, real time diurnal and hot soak testing at elevated temperatures (so-called 3-day D+HS), and extend the durability requirements to the same useful life as applicable to exhaust emission controls. Following a February 10, 1994, Board hearing, the enhanced evap emission standards and test procedures were amended to include the United States Environmental Protection Agency's (U. S. EPA's) supplemental (so-called 2-day D+HS) standards and test procedures, as well as to substantially align the ARB's procedures with the federal procedures. Further refinements were adopted after a June 29, 1995, Board hearing, in conjunction with the adoption of the on-board vapor recovery (ORVR) standards and test procedures.

Evap emission control systems (EECSs) are required to demonstrate durability and compliance with the standards for a vehicle's useful life. Manufacturers normally establish specifications and test procedures to assure that the EECS will be durable and perform properly under conditions encountered during typical customer usage. However, it is not cost-effective to require small volume manufacturers (SVMs) or small volume engine families (SVEFs) to run durability testing programs when sufficient experience on similar EECS have been demonstrated. In these cases, SVM engine families and SVEFs may be certified by using assigned DFs without running the durability tests [Section 4.c.4 of Reference 2 and Section 86.095-24(e) of Reference 3.]

The assigned DFs specified in this MAC were determined from 1995 and 1996 MY certification data. These assigned DFs were determined to be equal to the average plus one standard deviation. The 1995 and 1996 MY certification data (from which the assigned DFs were derived) were from gasoline-fueled passenger cars (PCs), light-duty trucks (LDTs) and medium-duty vehicles (MDVs) below 8,500 pounds Gross Vehicle Weight Rating (GVWR). These vehicles were certified to the 2.0 gram per test (gpt) 3-day D+HS standard. For compliance with the 2-day D+HS standards applicable to the

1996 and subsequent MYs, manufacturers have carried across the 3-day D+HS DFs as allowed in the test procedures [Section 4.c.iii of Reference 1.] As a result, the assigned DFs in this MAC for the 3-day D+HS and 2-day D+HS are the same.

Due to the lack of certification data for MDVs below 8,500 pounds GVWR with a fuel tank greater than 30 gallons in capacity, and MDVs of 8,501-14,000 pounds GVWR, which are subject to the 3-day D+HS standards of 2.5 gpt and 3.0 gpt, respectively, the assigned 3-day D+HS DFs for these vehicles were established by using the PC/LDT/MDV assigned 3-day D+HS DF multiplied with the proportional factors of 1.25 (2.5 gpt / 2 gpt) and 1.5 (3 gpt / 2 gpt), respectively. As stated above, since manufacturers are allowed to carry-across 3-day D+HS DFs for compliance with the 2-day D+HS standard, the assigned 2-day D+HS DFs for these vehicles were also set equal to the assigned 3-day D+HS DFs.

As heavy-duty vehicles (HDVs) are subject to the same 3-day D+HS and RL standards as PC and LDT, the assigned DFs for these vehicles were set to be the same as those for PC and LDT for lack of pertinent heavy-duty vehicle certification data.

POLICIES:

1. Assigned DFs for one or more engine families may be used under either of the following conditions:
 - a. a manufacturer's projected total California sales of PC, LDT, MDV and HDV do not exceed 3,000 units for the certification model year; or
 - b. the combined engine families represent a total of not more than 3,000 units of PC, LDT, MDV and HDV per model year per manufacturer, regardless of a manufacturer's total California sales [Section 4.c.4.(2)(i) of Reference 2.]
2. Assigned DFs may be used only when specific mileage accumulation or durability test data do not exist. Assigned evap emission DFs may not be used when evap emission durability testing was performed [Section 4.c.4.(2)(ii) of Reference 2.]
3. The test procedures require that the certification evap DF is the average of the durability vehicle DF and bench DF. In the

case where no emission durability testing is conducted, the certification evap DF is equal to the bench DF. [Section 4.c.iii of Reference 1.]

4. The ARB may grant either (or both) the assigned durability vehicle DF, or the assigned bench DF. [Section 4.c.4.(2) (iii) of Reference 2.]

5. Assigned DFs shall be applied to the entire exhaust and evap families. Split certification is not allowed where vehicles that belong to the same exhaust and evap family are certified partially using assigned DFs, and partially using actual durability data. [Section 4.c.4.(2)(ii) of Reference 2.]

6. A manufacturer requesting to use assigned DFs is not exempted from showing evidence of durability of the evap control components and system. This required proof of durability can be provided, for example, by the manufacturer's in-house testing program, and/or development testing program. If durability is to be demonstrated by a comparison to another evap control system that has actual durability data and has been certified, then parameter comparison including part numbers and operating conditions must be presented. [Section 4.c.4.(2)(ii) of Reference 2.]

7. A manufacturer requesting to use assigned DFs, shall provide all relevant information, including but not limited to canister nominal working capacity and location, purge strategy (purge rate and volume), method of purge control, fuel tank capacity, variables affecting fuel temperature (use of fuel return, material, shape of fuel tank, distance of fuel tank from road surface and distance from exhaust pipe, total underbody airflow), fuel and vapor hose materials, use of sensors and auxiliary control devices and technical comparison to a certified EECS [Section 4.c.4.(2)(iii) of Reference 2.]

8. Assigned Evap DFs.

Assigned Evap DFs, either vehicle DFs or bench DFs, are established as follows for 1995 MY and subsequent gasoline-fueled vehicles subject to the enhanced evap emission control requirements. At the present time, the ARB has not established assigned evap DFs for alternative fueled vehicles.

Assigned Enhanced Evap Deterioration Factors
1995 Model Year and Subsequently

		3-day D+HS	2-day D+HS	Running Loss
PC and LDT		0.18	0.18	0.002
MDV (6,001- 8,500 lbs GVWR)	fuel tank < 30 gal	0.18	0.18	0.002
	fuel tank \geq 30 gal	0.23	0.23	0.003
MDV (8,501- 14,000 lbs GVWR)		0.27	0.27	0.003
HDV		0.18	0.18	0.002